## AMENDMENTS TO THE CLAIMS

Please amend claims 1, 2, 11 and 14, as shown below. A complete listing of the claims, including their current status, is set forth below.

1. **(Currently amended)** A data acquisition system, comprising an accumulator having two or more parallel accumulation paths and configured to accumulate corresponding data samples across a transient sequence through **at least two** different accumulation paths **to provide a summation of said data samples of said different paths**.

2. **(Currently amended)** The data acquisition system of claim 1, further comprising a sampler coupled to the accumulator and configured to produce a plurality **of** data samples from a transient sequence.

3. **(Original)** The data acquisition system of claim 2, wherein the sampler comprises an analog-to-digital converter.

4. **(Original)** The data acquisition system of claim 1, further comprising a controller coupled to the accumulator and configured to cycle the accumulation of data samples through each of the accumulation paths.

5. **(Original)** The data acquisition system of claim 4, wherein the controller is configured to selectively enable each accumulation path.

6. **(Original)** The data acquisition system of claim 1, wherein each accumulation path comprises an adder and a memory.

7. **(Original)** The data acquisition system of claim 6, wherein the accumulation path memory comprises a dual port random access memory.

8. **(Original)** The data acquisition system of claim 1, wherein each accumulation path is configured to produce an output representative of the sum of two inputs.

9. **(Original)** The data acquisition system of claim 8, wherein the accumulation paths are coupled in series, with a first input of each accumulation path coupled to a sampler and a second input of each accumulation path coupled to the output of another accumulation path.

10. **(Original)** The data acquisition system of claim 1, further comprising an ion detector.

11. **(Currently amended)** A time-of-flight mass spectrometer, comprising:

an ion detector configured to produce a transient sequence from a plurality of ion packets;

a sampler configured to produce a plurality of data samples from the transient sequence; and

an accumulator coupled to the sampler, comprising two or more accumulation paths and configured to accumulate corresponding data samples across the transient sequence through **at least two** different accumulation paths **to provide a summation of said data samples of said different paths**.

12. **(Original)** The mass spectrometer of claim 11, further comprising a controller coupled to the accumulator and configured to cycle the accumulation of data samples through each of the accumulation paths.

13. **(Original)** The mass spectrometer of claim 11, wherein the sampler comprises an analog-to-digital converter.

14. **(Currently amended)** A method of acquiring data, comprising:

producing a plurality of data samples from a transient sequence; and

accumulating corresponding data samples across the transient sequence

through **at least** two or more parallel accumulation paths **to provide a summation**

**of said data samples of said different paths**.

15. **(Original)** The method of claim 14, further comprising cycling the
accumulation of data samples through each of the parallel accumulation paths.

16. **(Original)** The method of claim 15, wherein data samples are cycled by
selectively enabling each accumulation path.

17. **(Original)** The method of claim 15, wherein data samples are cycled by
selectively directing consecutive data samples sets to a respective accumulation
path.

18. **(Original)** The method of claim 14, further comprising converting an
analog transient to one or more digital data samples.

19. **(Original)** The method of claim 14, further comprising producing a
transient from a received ion packet.

20. **(Original)** The method of claim 14, further comprising launching a
plurality of packets along a flight path defined in a time-of-flight mass
spectrometer.